

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Yechiel Shai et al.

Confirmation No.: 8544

Application No.: 10/560,727

Patent No.: 7,671,011 B2

Filing Date: October 10, 2006

Patent Date: March 2, 2010

For: ANTIMICROBIAL AND ANTICANCER  
LIPOPEPTIDES

Attorney Docket No.: 85189-16300

**REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 C.F.R. § 1.323**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

It is requested that a Certificate of Correction be issued in connection with the above-identified patent correcting the errors listed on the accompanying Form PTO-1050. The corrections requested are as follows.

On the Title page, Item (57) **ABSTRACT**, line 2, change "acid The" to -- acid. The --.

This request is being made pursuant to 37 C.F.R. § 1.323 to correct errors of a clerical or typographical nature and do not involve changes that would constitute new matter or require reexamination. A fee of \$100 is believed to be due for this request. Please charge the required fees to Winston & Strawn LLP Deposit Account No. 50-1814. Please issue a Certificate of Correction in due course.

Respectfully submitted,

Date: June 17, 2010



Allan A. Fanucci, Reg. No. 30,256

**WINSTON & STRAWN LLP**  
**Customer No. 28765**  
212-294-3311

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

PATENT NO. : 7,671,011 B2

Page 1 of 1

APPLICATION NO. : 10/560,727

DATED: : March 2, 2010

INVENTOR(S) : Shai et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page:

Item (57) ABSTRACT, line 2, change "acid The" to -- acid. The --.



US007671011B2

(12) **United States Patent**  
**Shai et al.**

(10) **Patent No.:** **US 7,671,011 B2**  
(45) **Date of Patent:** **Mar. 2, 2010**

(54) **ANTIMICROBIAL AND ANTICANCER  
LIPOPEPTIDES**

(75) Inventors: **Yechiel Shai, Yehud (IL); Dorit  
Avrahami, Ashdod (IL)**

(73) Assignee: **Yeda Research & Development Co.  
Ltd., Rehovot (IL)**

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 327 days.

(21) Appl. No.: **10/560,727**

(22) PCT Filed: **Jun. 18, 2004**

(86) PCT No.: **PCT/IL2004/000544**

§ 371 (c)(1),  
(2), (4) Date: **Oct. 10, 2006**

(87) PCT Pub. No.: **WO2004/110341**

PCT Pub. Date: **Dec. 23, 2004**

(65) **Prior Publication Data**

US 2007/0072808 A1 Mar. 29, 2007

#### **Related U.S. Application Data**

(60) Provisional application No. 60/479,465, filed on Jun.  
19, 2003.

(51) **Int. Cl.**  
**C07K 7/00** (2006.01)

(52) **U.S. Cl.** ..... **514/2; 530/327; 530/328**

(58) **Field of Classification Search** ..... **514/2;**  
**530/329, 330, 331, 327, 328**  
See application file for complete search history.

(56) **References Cited**

#### **U.S. PATENT DOCUMENTS**

3,817,973 A *	6/1974	Bouchaudon et al. ....	530/319
5,583,198 A	12/1996	Whittaker .....	530/345
5,837,249 A	11/1998	Heber-Katz et al. ....	424/186.1
5,871,746 A	2/1999	Boutillon et al. ....	424/208.1
6,011,008 A	1/2000	Domb et al. ....	514/8
6,011,013 A	1/2000	Carr et al. ....	514/13
6,172,038 B1	1/2001	Shai et al. ....	514/2
6,183,736 B1	2/2001	Moyne et al. ....	424/93.462
6,384,013 B1	5/2002	Burkhardt et al. ....	514/11
6,794,490 B2 *	9/2004	Hill et al. ....	530/317
7,262,268 B2 *	8/2007	Morytko et al. ....	530/317
2002/0077317 A1	6/2002	Das .....	514/171

#### **FOREIGN PATENT DOCUMENTS**

WO	WO98/37090	8/1998
WO	WO02/40529	5/2002

#### **OTHER PUBLICATIONS**

Creemer L. C. (J Med Chem. 39(25), 5021-4, 1996).  
Uehara Y (Journal of Antibiotics 29(9), 937-943, 1976).  
Schott H (Anti-Cancer Drug Design 11(6), 451-62, 1996).\*

Trani A [Farmaco (Societa Chimica Italiana: 1989), 51(7), 503-512,  
1996].\*

Clark C. R. (J Med Chem. 30(7), 1214-18, 1987).\*

Alexander et al., "Antifungal resistance trends towards the year 2000.  
Implications for therapy and new approaches". Drugs. Nov.  
1997;54(5):657-78.

Avrahami et al., "Effect of multiple aliphatic amino acids substitu-  
tions on the structure, function, and mode of action of diastereomeric  
membrane active peptides". Biochemistry Oct. 23,  
2001;40(42):12591-603.

Avrahami et al., "Conjugation of a magainin analogue with lipophilic  
acids controls hydrophobicity, solution assembly, and cell selectiv-  
ity". Biochemistry Feb. 19, 2002; 41(7):2254-63.

Bechinger, "The structure, dynamics and orientation of antimicrobial  
peptides in membranes by multidimensional solid-state NMR spec-  
troscopy". Biochim Biophys Acta. Dec. 15, 1999;1462(1-2):157-83.

Denning DW. "Epidemiology and pathogenesis of systemic fungal  
infections in the immunocompromised host". J Antimicrob  
Chemother. Oct. 1999;28 Suppl B:1-16.

Efron et al., "Direct interaction of dermaseptin S4 aminoheptanoyl  
derivative with intraerythrocytic malaria parasite leading to increased  
specific antiparasitic activity in culture". J Biol Chem. Jul. 5,  
2002;277(27):24067-72. Epub Apr. 5, 2002.

Gavish et al., "Growth inhibition of prostate cancer xenografts by  
halofuginone". Prostate. May 1, 2002;51(2):73-83.

Groll et al., "Trends in the postmortem epidemiology of invasive  
fungal infections at a university hospital". J Infect. Jul.  
1996;33(1):23-32.

Hong et al., "Structure and organization of hemolytic and  
nonhemolytic diastereomers of antimicrobial peptides in mem-  
branes". Biochemistry. Dec. 21, 1999;38(51):16963-73.

Merrifield, "Solid phase peptide synthesis". J. Am. Chem. Soc. Jan.  
31, 1963; 85: 2149-2154.

Minamoto et al., "Fungal infections in patients with acquired  
immunodeficiency syndrome". Med Clin North Am. Mar.  
1997;81(2):381-409.

Oren et al., "Selective lysis of bacteria but not mammalian cells by  
diastereomers of melittin: structure-function study". Biochemistry.  
Feb. 18, 1997;36(7):1826-35.

Oren et al., "A repertoire of novel antibacterial diastereomeric  
peptides with selective cytolytic activity". J Biol Chem. Jun. 6,  
1997;272(23):14643-9.

Oren et al., "Mode of action of linear amphipathic alpha-helical  
antimicrobial peptides". Biopolymers. 1998;47(6):451-63.

Papo et al., "A novel lytic peptide composed of DL-amino acids  
selectively kills cancer cells in culture and in mice". J Biol Chem.  
Jun. 6, 2003;278(23):21018-23. Epub Mar. 19, 2003.

(Continued)

Primary Examiner—David Lukton

(74) Attorney, Agent, or Firm—Winston & Strawn LLP

(57) **ABSTRACT**

Lipophilic conjugates comprise a peptide coupled to a fatty  
acid. The peptide comprises at least two positively charged  
amino acid residues; the peptide after conjugation to the fatty  
acid possessing antibacterial, antifungal, and/or anticancer  
activity higher than prior to conjugation. The lipophilic con-  
jugates are suitable for treatment of infections caused by  
pathogenic organisms such as bacteria and fungi. The lipo-  
philic conjugates are also suitable for sanitation, as disinfec-  
tants, or for food preservation.

**14 Claims, 4 Drawing Sheets**